

IRON VALVES FOR MINING AND OTHER LARGE PUMPS.

INSTITUTION OF CIVIL ENGINEERS.

Provisions.—The Lords of the Treasury have authorized the Commissioners of Customs to allow drawback of duties at the rate of 50 per cent.

...of the governing citizens of that most useful body, the Institution.

At one of the sittings, through the courtesy of Mr. Jordan, a long discussion ensued on the relative advantages of various kinds of valves for large pumps, and Mr. Jordan exhibited and described a model, showing four principal pump valves used by mining engineers; the model was one of a series intended to illustrate mining machinery, now in course of construction for the Museum of Economic Geology; this model was composed of a glass water chamber and pipes, connected with a steam pump, so that as the water circulated through them all simultaneously, the action could be seen to the best advantage, and the water being discharged over the collar bander at the head of the pump, it might be made to circulate in a perpetual stream. These valves he divided into four classes—1. Those in which an attempt is made to counteract the violence of the concussion of the beat, on closing, such as the common pump "clack," moving on a leather joint, which has a very small water way, and the bottom clack, being a disc of metal, with a centre stand, which rose and fell in a guide, this had no water way, and was considered the best, and in mine pumps of moderate diameter, this valve is much in use. 2. Those in which that evil was reduced by dividing the horizontal area of the valve into several parts, the simplest of these was well known, as the butterfly valve, in which two semicircular parts opened on a central hinge of leather, and both closing at the same time, the concussion was reduced. The next on this principle was composed of several triangular pieces, opening on leather joints, from the circumference of the valve seating; it had been much used by Captain Reed, of the Mold Mine, Flintshire, and had been reported on favourably by several other mining engineers; it closed with a very small concussion, while the water way was large and nearly direct, admitting the mass of water to pass upward, in the parallel to the sides of the pump; in some valves of this class no leather was used, which rendered them more serviceable to large pumps in deep mines where continuous working was of such importance. 3. Those in which the same object was attained, by reducing the horizontal area of the several parts of the valve. Among these were Messrs. Harvey and Weat's, Mr. Hinkins's double beat, and Mr. Darlington's cylindrical beat valves; the two former of these were well known, and much used in Cornwall. Mr. Darlington's was contrived for a set of pumps under his management at the Aport Mines, Dorsetshire; the column of water in this pump was thirty-six inches diameter, and twenty-two fathoms high; to reduce the concussion in such case consistent with the power of closing the valve in proper time, formed a cylinder to rise over a metal ring peaking in the seating of the valve, such as to give a large lateral water way under the beat formed by the bottom of the cylinder; this valve was found to work well, but required a large chamber for the subsidence of the water. 4. That in which the concussion was reduced to any desired amount, by making one side of the column, to a certain degree, balance the other. The only use of this kind was that of Messrs. Palmer and Perkins; it consisted of an elliptical disc, moving on an inclined parallel, and near to the minor axis of the ellipse, and closing at considerable angle against the interior surface of a cylinder working in a pump barrel. It possessed an advantage as to water way over every other valve, nearly the whole of the water passage being nearly parallel to the side of the pump.—Mr. Taylor made some remarks on the plunger pump; which he said, was of great importance, for as it permitted both valves to be fixed in their seatings, and thus increased the area to any convenient extent, was an superior to the lift that he was surprised such tardiness was exhibited in its use, when the principle had been known so long, and the loss of power by the old system generally admitted.—A long conversation ensued, in which Messrs. Perkins, Farey, Jordan, Homersham, and E. Galloway joined, and which appeared to create much interest; it was generally considered that great improvements had gradually taken place, of which the first step might be considered the butterfly valve; that the disc valve was at present the most advantageous for large pumps, but that there was yet room for the extension of much further ingenuity.

MR. MALLET'S PAPER ON WATER-WHEELS

Are these differences nothing? Will Mr. Mullis answer? And will he answer what questions he determined, by experiment, which the Franklin Inc.

ANIMATED SPRING FOR RAILWAY CARRIAGES.—The Durham A
serting furnishes the following description of a new and valuable spring
giving elasticity to railway carriages, of which Mr. Heston, of
York, of Darlington, is the inventor and patentee. The new invention
now in constant operation on the Stockton and Darlington Railway, and it
is recently admitted for its superiority over the ordinary spring now in
use. The action given to the carriages is perfectly smooth, easy, and free from
unpleasant vibration caused by the hardness of the steel spring; and
lateral action, which in most carriages is so very disagreeable, is entirely
removed. The following is a brief description of it.—The air is by means
of an air-pump, condensed in a small metallic cylinder, made air-tight at
each end, and having a piston at the other end working perfectly air-tight; on
these cylinders is placed over the axle box of each wheel, the piston and
valve is in the centre of the box, so as to form an universal joint; a
rod of the cylinder is placed over the framework of the carriage, the end
of which works in a ball and socket joint similar to that of the piston-rod.
In the cap of the cylinder there is a small screw, which can be taken out or
adjusted, and the air pump applied, by which means, by the condensation of
more or less, the air is condensed in the cylinder, consequently the carriage
supported by the four columns of condensed air, and that air, by its elasticity
counterpoises itself to the weight of the load, whether it be heavy or light.
The cylinders working in ball and socket joints at each end allow the carriage
to work with much greater ease and freedom than when it is bound up and
with the long steel springs, and is a great acquisition to going round the road
this new prevents the lateral motion, which would otherwise be given to the
carriage. The cylinders, when more charged, retain the air for a number of years,
should the air by any possibility become gradually exhausted, it is very easily
renewed by taking out the small screw above described, and applying the
pump; this operation occupies a few moments only, and can be done with
ease, the operation of deranging any part of the carriage. By the action
of this spring, the spring in the wheels of each end of the carriage will
be in very good order, and its durability and exemption from deranging
parts, either from corrosion or any other cause, will render it a great ad-
vantage to railway companies. It is also admirably adapted to locomotive
engines, and to the heavy loads.

SUNDAY TRAVELLING ON RAILWAYS.—We learn by the Liverpool Courier that, at a recent meeting of the supporters of the proposed Glasgow, Dumbarton, and Clyde Railway, the subject of Sunday travelling on the proposed line was a good deal discussed. Mr. Leslie, chairman of the principal committee, who attended as a representative, replied in answer to questions from Mr. Colquhoun, then the Kilmaronach and Ardrossan line was open for travelling on a Sunday. It would then appear that Scottish lines then have got the activity in this line, and as it is intimated that this matter should have a portion of the intended line, all communication with Glasgow would be stopped on a Sunday. It was very justly considered that the closing on this subject would greatly influence distant parties as to taking out and that, should the opinion of the directors be against Sunday travelling, it would be highly detrimental to the undertaking. It is true, Government under an Act passed two years since, has exempted railway companies to on the whole on a Sunday; but this is of an accommodation to the public, not an travelling to be continued. Mr. James pertinently asked, why could not the companies which opened another pattern to travel? and said no person would ought to be allowed; he might, too, however, be called on a question like or death, to see a dying parent or child, and when he gets to the station he is told the train is out for; and, on his own got no other conveyance, must wait till Monday, when, on his arrival, he might find himself late in the morning, therefore, that no set of directors had a right to judge of the convenience of parties who were travelling, and the proposal had would be directly affected against the idea of closing on Sundays was really situated.

The extraordinary saving in the formation of railways, where a double line can be dispensed with, and safety and punctuality secured by only a single line, with sidings at proper intervals, renders the full utilization of the power of this invention of the utmost importance, not only to projectors and engineers of proposed new lines but to the public at large. W. F. Cooke, Esq., having been requested by several gentlemen connected with railways to give them an opportunity of inspecting the apparatus, previous to its being sent to its destination, the Norwich and Yarmouth Railway, it was exhibited in operation, at the Society of Arts, on the 20th, 22d, and 24th inst.—Mr. Cooke attending to give any explanation required. The principle on which this form of telegraph is constructed, is founded on Oersted's celebrated discovery, that a magnetic, or compass, needle, may, through the agency of a voltaic current, be invested with an artificial polarity; and that a magnetic needle, placed parallel and near to a conducting wire, will, during the transmission of the current, stand at right angles to the wire. The apparatus for conveying out this principle consists of a handsome polished mahogany case, precisely similar to a modern chronometer—the lower part containing the batteries, and the upper five dials, with magnetic pointers in the centre of each, as follows, with a handle to each:—

When this is a case of smaller dimensions, containing the "speaking to."

Above this is a case, of smaller dimensions, containing the "speaking telegraph," having a dial, with the letters of the alphabet, numerals, &c., with two magnetic pointers and handles; and a variety of conventional signals; and the whole is surmounted by a still smaller case, containing the alarum—together forming an elegant structure of cabinet work, about 5 ft. 6 in. in height; the pointers are suspended vertically, on an axis moving freely through the face of the dial; behind is another magnetic pointer, on the same axis, so that they move together; part of the conducting wire is coiled many times longitudinally round a frame, in which the magnet moves, to subject the magnet to the multiplied deflecting force of the voltaic current, and the magnetic motion is limited on both sides by stops. The motion of the handle, either right or left, completes the circuit of the conducting wire with the voltaic battery, and deflects the needle in the same direction. The length of the Norwich and Yarmouth line is 20½ miles, with two stations at Reedham and Blundell, with sidings, and two intermediate stations, without sidings, Cantley and Buckenham—thus:—

Miles.	Miles.	Miles.	Miles.	Miles.
Yarmouth, 2—Roodham, 2—Cantley, 2—Buckenham, 12—Brundal, 6—Norwich.				
(Stilling).				(Stilling).

To illustrate the practical working of these arrangements, under the most difficult circumstances, we will now follow an express (and, therefore, unopposed) train in its course from Norwich to Yarmouth. A fixed time, say five minutes, before the train leaves Norwich, the superintendent having first ascertained that the line is clear at the Brandon Junction, will ring the Brundall alarm. He then turns his Norwich handle to the left, which movement causes a corresponding indication by the system of Norwich pointers at all the stations, and thus informs the clerk at Brundall and the other stations of the line that an up-train is about to start if the line is clear. If it is clear, the Brundall clerk (whose attention has been called to the alarm) announces the fact by giving the same signal upon his own compartment. The train being now ready, the Norwich superintendent gives the usual order to start, and, as the engine moves forward, he restores the handle of his telegraph to its upright position again. The pointers of the Norwich system then, by becoming vertical, instantly give notice to the other stations that the "up-train has left Norwich," and is on its way to Brundall. This serves as a warning to the clerk at Redham (the station beyond Brundall), to give the signal "up-train," in his compartment of the telegraph, that the clerk at Brundall may be prepared to notify to the train upon its approach, that the "line is clear to Redham." Presently the train is seen approaching Brundall; and, if not intended to stop at that station, leave to proceed is given to the conductor in the usual way, and the clerk at the same time puts down the handle of his compartment; whereupon all the pointers of the Brundall system resume their vertical position, and announce to the other stations that the "up-train" has passed Brundall, and is on its way to Redham; and the same routine is repeated as long as the line is clear.

The conducting wires extend along the whole line, supported in the air on wooden standards nine feet high. Strong posts of timber are firmly fixed in the ground every quarter of a mile, from which the wires are strung, and between every two "straining posts" are standing apparatus on each straining post, and, at all, the wires are carefully insulated by being attached to non-conductors of earthenware, or, if not perfectly insulated, in wet weather, the dampness of the wind, in connection with the wire, would produce the electric current into the earth. The experiments at the Society of Arts were highly satisfactory to all who have witnessed them; two telegraphs were established in distant parts of the society's house, in the Adelphi, and the communication kept up was perfect and rapid. General Panley has carefully investigated its action, and approves of it in every respect; the Lords of the Admiralty also honoured Mr. Cooke with a visit on Tuesday last, and expressed their high satisfaction at the result of the experiments; and it is expected in a few days that some members of the Government will visit Newcastle for the purpose of seeing it in use on the line. There is little doubt, by the use of this telegraph, a railway communication will have been introduced on this line, at once inexpensive, safe, and convenient, rendering it what it was never intended all should become, highways for the public generally; and, at the same time, adding greatly to the revenue.

EARLY PLANS FOR RAILROADS.

There exists at present but one system of railroad, but several others have been proposed. An English engineer, of the name of Palmer, some years ago imagined a railroad, which, if it were to be constructed along a country, would resemble in the eyes of a traveler an ordinary way. This road, in reality, is nothing more nor less than a wall, on which bands of iron are placed; these bands form the road in question. He did not decline it for carriages, but simply for two cases, one on the right and the other on the left of the two fastened together by a chain, and placed on the wall with iron bands, like the pavers on a dunkey. It was not with locomotives, but with horses, that Mr. Palmer wished to work this railroad. He thought that as it was the least which excused the friction, there would be a great savings in making it go than on flat iron bands. This system has never been put into action. In France M. Naguet invented a system something similar to that of Mr. Palmer. M. Naguet's road was only intended for the removal of materials of all sorts, such as wood, stone, &c. This plan consisted of a series of trees, squared, fixed to pillars, and covered with two bands of iron at the two upper edges. By means of a carriage in the form of a horse shoe, the two rails turned upwards, and bearing such a little wheel, which turned on the above-mentioned bands of iron, heavy loads could be easily transported along the trees forming the road. This road, which is easy of formation, and as easily taken asunder, would be found very economical in moving districts, or where large trees were to be removed. It should be added that the most important companies could construct or repair it. M. Chaze, of Strasbourg, having ascertained the great convenience of iron wire, thought that it could be used as a means of transport, in nearly the same way as cables are used to cross a ferry. By M. Chaze's system the wires were fixed in stakes placed at convenient distances. Any load whatsoever, suspended to a chain or pulley, disposed in nearly the same manner as in Mr. Palmer's system, and thrown from one of the stakes, would go rapidly over more than half the distance between the two stakes. As soon as it had passed beyond half the distance, an alarm raised the wire, and propelled the load there towards the second stake, and even beyond. This method has no great inconvenience, which was, that when the load passed on the head of the stakes along the fixed wire, there was a violent shock which might have broken everything. A talented and skilful mechanic, however, took advantage of this weakness, and M. Chaze

RAILWAYS.—The extent of railways already constructed and in operation in the United Kingdom is most striking; the area which has already been actually expended in their formation is no less than 75,000,000, sterling; the projects now before Parliament will, if sanctioned, add nearly another 100,000,000 to the existing length of our railways, and more than half of their expenditure is to be applied to the rate of constructing the existing lines, almost other 50,000,000 sterling would be added to railway investments; but, neither one nor the other of these, to add another 150,000,000, sterling to railway stock will be probably a more beneficial calculation. Thus, in a few years, the enormous sum of 250,000,000 of money will have been invested by the English capitalists in the construction of railways at home, besides a very considerable sum which has been sent out of the country to assist in the formation of foreign railways.

RAILWAY BARRIERS.—There has frequently been some on the construction of railways, and there are in some cases that the building of the rail makes these more secure, but it should be borne in mind that nothing practically tends so much to secure it against, and to obliterate the marks, as having up in down which has attracted a certain height, and by no means nothing is, which does not only be as good as an extension of the English railway some time since. I believe that it would not be better to have the long station for some years after it has been built; but any country garden will furnish the former part of my statement.

MINING RECORD OFFICE, 5, SHORTER'S COURT,

THAGMORTON-STREET.—The large amount of capital invested in mining operations being rapidly on the increase, while the facilities afforded for acquiring information are admitted to be incomplete, the Editor of the MINING JOURNAL is enabled to make such arrangements as he considers will be deemed satisfactory; and, if not perfect, at least be an approximation to the desired end—that of forming a complete and reliable record of the progress of the several colonies, with copies or abstracts of the same and various other general information to the advertiser, which, at present, can only be obtained with considerable trouble.

The MINING RECORD OFFICE will be open to all parties SUBSCRIBERS to the MINING JOURNAL, where the various reports may be consulted. A separate room is appropriated for meetings of parties on business, and every facility rendered to facilitate the progress of the various reports. The current prices of shares will be given daily, so far as is practicable. Mr. Editor is proud of saying, that the several place brokers and agents mention the accounts, and whose statements he respectfully courts.

Reports and copies of accounts filed immediately on receipt, and plans and sections of the several mines will be kept, and sent on from time to time, for reference. Further particulars in the country may have their letters addressed to the Mining Record Office.

Mr. Editor will be happy to attend to the communications of friends in the purchase or disposal of Mineral Property, Mining, Railway, and other shares, and all transactions connected with the money market.

A Register kept of Shares for Purchase and Sale.

Office hours Ten till Five o'clock.

5, Shorter's Court, Thagmorton-street, E.C.

IMPROVED WAR ROCKET.—A person desiring information on the subject of the MANUFACTURE of the IMPROVED WAR ROCKET, may be informed of the terms on which full information will be given, by application personally, or by letter (post paid), to Major F. A. L. V. J. M. George's, Kensington New York. These rockets will range over a distance of 10 miles, and will be used most successfully in throwing ropes over inaccessible places, or even maintaining with or from the shore, in case of war.

TO ENGINEERS, RAILWAY CONTRACTORS, MINING AGENTS, IRONMASTERS, AND OTHERS REQUIRING FINE GREASE FOR MACHINERY AND AXLES of every description.—JOSEPH FERGUSON'S IMPROVED ANTI-FRICTION GREASE is—after trials on machinery and axles of every kind where constant friction is kept up—admitted to be the most useful, economical, and best preparation of the kind ever offered to the public.

References to scientific and practical men can be given, and testimonials shown of the great advantage—being forwarded on application at the manufacturing works, Great, Wellington-street, Blackfriars-road, London.

NOTICES TO CORRESPONDENTS.

The Mining Journal is regularly published about Ten o'clock on Saturday afternoon, at the office, No. 25, FLEET STREET, where it can always be obtained, and there is no need for irregularity in its supply, or from other than regular on the part of the agent through whom it is ordered, and, on receipt of the advertisement in country newspapers, the time is shared with the Post office authorities.

LONDON, FRIDAY 12TH.—Our usual report of the state of the share market, from Mr. J. G. G. of the Liverpool Stock Exchange, has not reached us this week.

J. F. V. (Birmingham).—We are obliged for the communication, and we shall at all times have pleasure in using similar particulars.

REASON.—In the Latin question in the article on Major Patten's Breakwater, in our last, by the last word, in the fourth line from the bottom, for "propaganda," read "propaganda."

A Subscriber (Dover).—First, when calibrating, is capable of being easily reduced to pounds, and is then sufficiently pure also for all ordinary experiments.

T. W. B. (Birmingham).—The paper originally appeared in our columns, and was transferred to the present issue.

THE MINING JOURNAL,
Railway and Commercial Gazette.

LONDON, APRIL 27, 1844.

A short absence from town, on a visit to the mines in the west—or, rather, we should say, in the eastern district of Cornwall—must be the true apology we have to offer for the brevity of our observations, and the absence of those remarks which occasionally accompany the correspondence; while we hope to acquire much useful information, from personal inspection, and obtaining reports from practical men on the spot, which it will be with pleasure we shall transfer to our columns. The necessity of seeing for ourselves is rendered the more apparent as we proceed westward—while the information we have already gathered in, in our estimation, not only valuable in itself, but calculated to excite interest with our readers, and, as we have reason to believe, lead to much useful correspondence of a scientific character—while those who are merely adventurers, we apprehend, will derive some advantage from our inquiries.

Among other subjects to which our attention has already been directed, we may mention the application of the atmospheric principle to the proposed line of railway through Cornwall, and we have much satisfaction in stating, that a deputation, consisting of Mr. B. W. W. and Mr. R. HARVEY, who have lately visited Ireland, with the object of acquiring every information as to the line from Kingstown to Dalkey, have, after a searching inquiry, arrived at satisfactory conclusions, and whose report will be shortly placed in the hands of the committee. There are several points, we are aware, which require much reflection, and, doubtless, many improvements in its application to a long line may be suggested. As we expect to be favoured with a copy of the report from the committee, we shall have no time in laying it before our readers, and, in the meanwhile, have to congratulate the supporters of the measure in having created themselves of the talents and abilities of the gentlemen named—the two former of whom, as Cornish engineers, are too well known, and whose labours are too well appreciated, to require any comment on our part; while Mr. HARVEY, as connected with the Hayle Foundry, as a sound practical man, forming one of the deputation, leaves us no doubt but that the report will be of an able nature, and thoroughly practical in its details.

We have, on our way, also paid a visit to the experimental works in operation at Plymouth, for carrying out the improvements in metallurgy comprehended in Mr. L. L. L.'s patent; and have to acknowledge the polite attention paid us by Mr. OLLAND, and H. BAKER, Esq. (one of the proprietors). The simplicity of the process is such, that it appears strange the object had not been before accomplished—several attempts having been made within the past thirty years, by practical chemists and metallurgists, all of which were attended with ill success. The substance of a certain proportion of salt with the pure ore, which are placed in a reverberatory or calcining furnace, passing over four beds, which occupy in this operation about seventy or eighty acres, and placing them when calcined in a calcining vat, into which a current of steam is passing, and afterwards depositing the iron and earth particles in a pulverulent state, while the copper, zinc, &c., are held in solution—and the subsequent treatment for the production of sulphate of soda, and taking up the metallic contents by precipitation—are all of the most simple character. As we propose, however, giving in an early Number a more full description of the process, the result of our own observations—which, although wanting in chemical lore, it will be our endeavour to render sufficiently broad to be understood by the general reader—we do not deem it necessary here further to dwell upon. The economy is great, and the practicability of so dividing and subdividing the ore, as substance, until its contents are rendered available, as bringing the process into a mechanical state, is such, as must insure its general application, when it shall become more known.

Having adverted to the result of our inquiries on subjects of general interest, we must needs say a word as regards the state in the eastern district—and our observations have been so successfully made. Already our own observations have been so successful, that we might draw with advantage; but, as in some instances the information required is not so perfect as we could wish, so effect which further personal investigation is indispensable. We shall avoid any other observations, than that the prospects are, generally speaking, of a highly encouraging character; and, therefore, that the return from abroad—and, we might say, sometimes—adventurers are of the most satisfactory nature, and would almost lead us to believe, that, despite the tariff obstacle, Cornwall will yet possibly hold up her head as a mining district.

In speaking of the tariff, which affects our mines, by the introduction of foreign ores to our home markets and colonies, we are led to make a remark on the companies lately formed for working mines in Spain; and this is the more necessary, as we have been given to understand, since our departure from town, that a paragraph appeared in one of the evening papers last week, evidently emanating from parties interested in, or connected with, the Astorian Mining Company, which would lead to suppose that this country would be inundated with the produce—whether quicksilver, (slow) silver, lead, copper, tin, or other metallic products—at which we are the less surprised (although we deprecate this course of puffing a concern into notice) when we recollect, that just previous to leaving town we were told, a handsome premium would be given for any shares which could be laid hold of; it being well known at the time that there were no shares in the market—the shares not having been "taken up"—the banker's book, as we are told, withdrawn—and an attempt being now made to force a market, by creating an artificial demand for shares, which the parties well know they are unable to procure, without they place them in the hands of other brokers, through whom they may themselves be supplied. This, no doubt, answers the object in many instances—as the consideration of double brokerage, and the turn of the market, is nothing, compared with bringing the "concern" out, and attracting public attention, if not to its merits, at least to the price of shares. Some rumours are afloat, for which we hope there are no grounds—such as the company having been formed for working mines, the denunciation of which was secured by parties resident in Spain, in the name of an agent, who has thought proper, in consideration of touching the "Spanish," to act as principal on the occasion, aided by a party who is known to many of our Cornish readers, and who has lately gone over to Spain, with a party of miners. It is right to observe, that we do not refer to Mr. MALACHY, who is known to be connected with a Spanish party of the first respectability in Madrid—the whole of the adventurers being, if we mistake not, natives of the mine; that gentleman not having yet left England—and who is about working the Linares Mines; he takes out a strong party, with machinery, mining implements, &c. We should not have taken the liberty of intruding Mr. MALACHY's name, but that it is right to draw the distinction between the two parties.

We hope next week, with more leisure, to say something of more interest; but, in this running commentary, we cannot allow the opportunity, even for a week, to pass by, without directing attention to a matter which may interest some of our readers.

WIRE ROPES.

This interesting species of cordage is fast superseding, in many situations, that formed of hemp. Wire ropes were, more or less, used in the French navy as long as twenty years ago; and public attention being gradually directed to their utility, they were, about ten years since, introduced, to a very considerable extent, into the service of the mines in the interior of Germany, and since then their acknowledged merits have rapidly worked their way for the better regulation of steam navigation, which required, amongst other things, that metallic connections should be employed between the steering wheels and rollers of steam-boats, several ingenious men turned their attention to the substitution of wire ropes for the hempen cordage generally employed. A consequence of this was, the manufacture of some very good wire ropes. The methods of manufacture have been gradually improved until a wire rope is now made, in which, without much impairing the lateral strength of the wire, a degree of pliability is retained such sufficient for every practical object, and almost, if not quite, equal in that possessed by cordage of hemp laid up in the usual manner.

In England, these wire ropes have recently been employed with the greatest success, in mine and railway use, and for the standing rigging of ships. They have received the public approbation of a large number of civil and mining engineers, amongst whom may be found some of the leading men, of those professions, in Great Britain. The leading manufacturers of wire rope in England, at this time, are Messrs. Smith and Newall, who have each secured patents for their respective processes. Wire ropes, both flat and round, of Newall's manufacture, have been very highly approved, under various circumstances of use. Thus, on the London and Blackwall Railway, eleven miles of this rope has been in constant use for two years. Six miles of wire rope on the Breckford Junction Railway, including an endless rope on an inclined plane 1000 yards long, is said to work very well. Thirty-seven miles of wire rope are in use upon the Durham and Sunderland Railway, and are stated by Mr. Hinkinson, the engineer, to have twice the duration of hemp ropes. On the Oldham line of the Manchester and Leeds Railway, a wire rope has been working very satisfactorily for eighteen months. Upon the inclined planes of the Shrewsbury Canal, wire ropes have been at work for two years and a quarter, and Mr. Booth, the engineer, expresses his belief, that they will last two years longer; and he states, at the same time, that upon these planes the hemp ropes, formerly used, never lasted more than two years, whilst their cost was double that of the wire ropes, and their weight four times as great! At the Glasgow Colliery, near Newcassel, two flat wire ropes have been in daily use for four months, without indicating the least wear—their weight, in proportion to hemp, being as 21 cwt. to 47 cwt. Mr. Hinkinson, a civil engineer in this state (Pennsylvania), has directed his attention to wire ropes; he has manufactured some very good ones, and has written some interesting articles upon the subject.

The canal commissioners of Pennsylvania having become aware of the importance of employing wire ropes in the internal improvement service, have put some of them in use upon the State works crossing the Allegheny range, and in their recent report we find the following paragraph—

WIRE AND HEMPEL ROPES.—The ropes for the inclined planes and for the line of the improvements have hitherto been an enormous annual expense to the State. They are made of hemp, and, upon an average, it is believed that they do not last more than one season. There are two required for the planes on the Allegheny Portage Railroad, one for the Schuylkill plane, one for the Millcreek ferry, and one for each of the ships for hauling out section boats at Columbia, Harrisburg, and Johnstown. The average cost of each of these ropes is about \$1500.00, requiring an aggregate yearly expenditure of \$7500.00, merely for cordage to do the work upon the main line of the improvements. It has been an object with the canal commissioners to reduce this heavy expense, if at all practicable. For that purpose they selected a wire rope for the plane No. 3 of the Allegheny Portage Railroad last year, which was used a considerable portion of last season, and the whole of the present year, and which comes to have been but little injured by use during that period. Wire ropes also, but of a lighter size, have been procured for the ships for hauling out section boats at Johnstown, Harrisburg, and Columbia, one of which has been in use for two seasons, the other two have done the work for one season. A wire rope for the plane No. 10 of the Portage Railroad has also been ordered, which has been manufactured and delivered at that place, and which will be put on in the spring.

So far as these wire ropes have been tried, they bid fair to answer the purpose; and if the experiment shall ultimately prove successful, a large saving will be made to the commonwealth by their substitution for hempen ropes.—*Journal of the Franklin Institute.*

ACCIDENTS IN MINES.—(Continued from our last.)—Yesterday evening a number of benevolent friends of the Institution for Teaching the Blind to Read met together at the London Tavern, Strand, to discuss the subject of a comprehensive arrangement. Nearly 5000 were assembled in the room towards the building fund, and for the general purposes of this excellent society. The chair was elegantly occupied by John Abel Smith, Esq., M.P., supported by the Earl of Arundel, Lord Dudley Stuart, M.P., Mr. Phipps, the Rev. R. R. R., Mr. P. N. Johnson, Mr. Mendenhall, Mr. Shaw, Mr. G. Thomas, and a number of other gentlemen connected with mining and commercial affairs. The annual report was read, and was well received, as well as the health of those ladies and others who had brought this institution to the present state of prosperity. The chairman's health was also drunk with great applause and enthusiasm, which appeared to be fully appreciated by that worthy gentleman. (We intend to give full particulars of the proceedings in our next week's Journal.)

DISCOVERY OF COAL MINES IN RUSSIA.—There have recently been discovered in the immediate vicinity of Moscow, and the nearest part of the empire, some very extensive coal formations, which, with probability, may contain a vast quantity of fuel for the manufacturing and industrial purposes of Russia. Moscow, Kaluga, &c., are the chief seats of the rapidly increasing cotton, woolen, and silk manufactures; and in fact are to be found these important and other great works, connected themselves, and have been manufacturing which contribute that useful, healthy, the Birmingham and Sheffield of Russia. The arrangements which are indicated in the consequence of these discoveries should be regarded as a grand opportunity of the importance of obtaining our home and colonial markets some security, and of it, possibly protecting them against foreign imports.

THE COLLIERIES' "STRIKE."

Since the remarks we made last week, but little alteration has taken place in the position of affairs as regards a return to employment on the part of the colliers; district meetings have been held, and resolutions passed to remain as they are. The military are now definitively stationed in various districts, and a large number of special constables sworn in.

The strictest caution is given by the leaders to keep the peace, not to injure property, nor molest those who choose to go to work—aye, well do these hypocritical paid advisers know that on the slightest infringement of the law their vile "occupation's gone." A very general belief is prevalent, that so impossible is it for the owners to comply with the "delegates' demands (for such they must, we think, be called), that arrangements are in progress for the introduction of several hundreds of Irish labourers into the collieries. A general meeting of representatives of the several collieries on the Tynes, Wear, Tees, Seaham, Hartley, and Blyth, was recently held, at which the following resolutions were passed:—

1. That the meeting are unanimously and decidedly of opinion, that it is impossible, in the present state of the coal trade, to comply with the demands of the pitmen for an advance of wages, which demands amount to an increase of upwards of 20 per cent. upon the lowest price, independent of a large increase in every other description of pitwork; and, that the conditions of the agreement submitted by the pitmen, as those which they have expressed their determination to abide by, are in other respects so manifestly objectionable, that this meeting feel themselves bound to express their firm resolution to decline complying with them.

2. That the wages during the past year, and which the coalowners have offered to continue for the current year, are sufficient to enable the labourers on the average to earn 3s. 6d. in a working day of eight hours, in addition to having their fire coal provided for them, and, in almost every instance, their houses and gardens rent free.

3. That it is incumbent on the coalowners to act calmly and deliberately in restoring these demands of the workmen; and that a special committee be named, to sit at the Coal Trade Office, to whom communications are requested to be addressed.

4. That the following gentlemen be appointed such committee:—Mr. George Johnson, Mr. Hugh Taylor, Mr. Nicholas Wood, Mr. John Jobling, Mr. Wm. Tuckwell, Mr. Thomas Crawford, Mr. Thomas Furter, Mr. Edward Potter, Mr. John Robson, Mr. G. Hunter, Mr. C. A. Mowbray, Mr. H. Hunt, and Mr. R. F. Phillips.

5. That the prices offered to the men (where offers have been made, or where offers have been made, the prices actually paid last year) be universally adhered to—and no deviation made without the sanction of the committee now appointed.

The colliers in the neighbourhood of Sheffield have put forth a statement of their grievances. They say, they only want 4s. for eight hours' work; and ask, if that can be considered exorbitant, considering the dangerous and unhealthy occupation! In reply to the statements, that they now receive as much as the trade ever did, they say, that some years back, when coal was selling at 7½d. per cove, they were paid, for hard coal 5s. 2d. per wagon of twenty cove, house-fire coal 3s. 5d., and coke coal 3s. 7d.—while at the present time, when hard coal is selling for 18½d., and house-fire coal for 9½d. per cove, they are paid only, for hard coal 4s. 4d., house-fire coal 3s. 8d., and coke coal 2s. 10d. per twenty cove; they further state, that some years since, when they had a struggle with their employers, to raise their wages, the price of coal was raised to the public—and, no sooner was this done, than the masters began to reduce the wages, and continued to do so until they got them to the present low rate.—That there are grievances, we have no doubt; but we advise the colliers to take their own measures to have them redressed, or, by trusting to others, they will become prototypes of "The Cats and the Monkey"—the latter will most assuredly swallow the oyster, and return them the shells.

An unusual, as well as unthought of, benefit to the coalowners has arisen out of the present state of things. At all coal-pits an immense accumulation of coal takes place during a continued working of the mines, and which is never touched during a regular demand and employment; the stock at bank at the commencement of the strike at the Marquis of Londonderry's mines alone amounted to 15,000 tons, and for the last fortnight a brisk trade has been carried on in the shipment of these stocks from Sunderland, Seaham, Hartlepool, &c., which has prevented any rise in price, and is actually "found money" to the owners, as they are making large weekly returns, without the pit outlay, and which will not interfere with the produce, when the men (which they eventually must) go to work again; there are, it is supposed, stocks of this kind sufficient to last many weeks. In North Staffordshire, we are happy to hear, that many of the men have left the Union, and some of the collieries are again in brisk operation; at Mr. H. H. Williamson's colliery, near Tunstall, from 200 to 300 men are again in full employment at 3s. per day of eight hours; these, however, all contributed to the Union, but one poor man not being able to make up a week's payment, amounting to 3s., the colliers all refused to work unless he was discharged, or the money paid. This Mr. Butterfield (the agent) positively refused, and informed them if they did not immediately go to work, he would discharge them all instantly, when they complied, without a word. Nothing can show more clearly the tyranny of the leaders of the Union, and that the only way to meet their ridiculous pretences is by firmness and determination. The general aspect of Staffordshire augurs a change for the better, though the mass Luddites are still lingering at various places, and endeavouring, by the most inhuman language and false colouring, to keep the still deluded portion of the men in the Union, and, if possible, draw back those who have had the sense to retire from it; we have no doubt a few weeks, in this district at least, will see him and his (worthy?) colleagues most signally disconnected.

COLLIERS' CONTRACTS—THE STRIKE.

A case of considerable importance at the present moment, and which it was understood was brought forward at the instigation of the Colliers' Union, came before S. B. Briscoe and H. W. Cope, Esqs., at the Kings-winchford Police Court, on the 19th inst.—John Mountford, a collier, was summoned by Richard Lake, also a collier, for refusing to pay 5s. 4d., being eleven days wages, at 3s. 4d. per day. There were twenty informations of the same description, all of which would be decided by the result of this. Many gentlemen connected with collieries and the iron trade, and several working miners, were present.—Mr. James (of Walsall) and Mr. Shaw (of Dudley) appeared for the complainant; the former stated the case. It appears the practice has hitherto been for either masters or men, on wishing to change, to give a fortnight's notice; and on this occasion the men gave notice, on the 2d March, that after the 15th they would not work on Mondays, meaning they would only work five days a week. He observed, that if the masters had the power to make what arrangements they pleased on their part, the men had the same right to labour when they pleased, or the contrary doctrine would make the former tyrants, and the latter slaves. The men worked the last week five days only, according to the notice, and were paid on Saturday accordingly; but, on going to work on the following Tuesday, they were told that, unless they agreed to certain regulations, they would not be allowed to work. He contended, that, having paid the first week, the men's notice had been accepted, and they were entitled to the amount claimed.—It unfortunately happened that the case could not be decided on its merits, as not one of the witnesses could prove a service of the notice on Mountford, and the Bench, of course, discharged the case.—Mr. Matthews, the owner of the colliery, said he took the whole responsibility of the case upon himself. He gave orders to Mountford how to act, and the regulations which he required the men to accede to were those of the county generally. There was water power connected with his works, and if the pit was left idle two days, and the engines followed the example of the men, the sales would be depressed, and the men actively prevented from working at all. With respect to wages, he had always paid the utmost rate of trade would allow, and he had imposed upon the men, that if they felt aggrieved at the conduct of the business, to inform him, and he would redress those grievances. The master's conduct of the colliery was now in existence had already done vast injury to the working collier, without being one bit nearer their desired object, and he hoped, this day's proceedings would do some good. He had taken on both hands, the old men were not at liberty to go where they pleased, and he hoped they would find an employer that would use them better than he had done.—We cannot but think a few such examples of firmness, by taking on both hands at once, would do more to open the eyes of the deluded "Union" than all that can be said or written.

DISCOVERY OF RAILWAYS IN RUSSIA.—The next month promises to be remarkably fertile in the opening to the public of various important railways throughout, that have hitherto been but partially or not at all in operation. On the 20th, will be opened the Liverpool and Derby Junction line; early in the month, also, we understand, the West London Railway will be brought into full operation, to the great advantage of the Birmingham and Great Western lines, whose passengers will be facilitated with a week-end business; then the Stockport and Arden line, that affords a like accommodation to the Crewe and Chester Railways; the Warwick and York Railway will also come into play, the opening being fixed upon for the 1st, 15th, and 20th inst. of all, the Bristol and Exeter will also be opened to the travelling public, completing nearly 300 miles of railway to the western parts of England. Next, come, we expect, the plans for increasing railway communication.

MR. HOPKINS'S SYSTEM OF MINERALOGY IN CONNEXION
WITH TERRESTRIAL MAGNETISM.—*Concluded.* X
MAGNETISM.—Mr. Hopkins having, in sixteen chapters,

THE 100th ANNUAL MEETING OF THE AMERICAN SOCIETY OF CLIMATE ENGINEERS

[illegible][illegible]

ON THE FLOW OF GASEOUS FLUIDS UNDER PRESSURE.

MINES IN SPAIN—ADVANTAGES OF RAILROADS.

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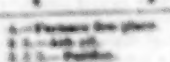
BRADFORD STEAM-BOILER EXPLOSION.

PATENT VESTA LAMP.

We shall shortly be enabled to speak, from experience, of the properties and value of this lamp; in the meantime, we think it only fair to refer those interested to some letters on the subject, which appeared in the Journal of the 8th inst.

VENTILATION OF MINES.

I had hoped to introduce a pipe from the purpose above alluded to—namely for purifying the atmospheric air on its first entrance into a mine from the surface of the earth, and to give the current of air, after passing it through powder, a compass of quality in all kinds of weather, and directing it of large portions of foul smother brought into a mine by a draught of air in storm weather, and an easterly wind. The sketch shows here in the plan of a

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VENTILATION OF MINES.

VENTILATION OF MIN

ALFRED T. J. MARTIN.

MINE SYMPHONY.

A. MINER,

USEFUL SELECTION OF SCIENTIFIC AND PRACTICAL WORKS.

NORTH COUNTRY SUMMERSON.

RACKS OF LODES, GUNNAN, &c.

ANOTHER INQUIRED.

[illegible]

Received June 20, 1990; accepted Oct. 23, 1990.

business that a division of the labor

Very truly, yours,
Frederic Mass.

1. 本報社址：台北市中正區重慶南路一段125號11樓
 2. 電話：(02) 2311-2311
 3. 傳真：(02) 2311-2311
 4. 郵政特准掛號認爲新聞紙類
 5. 本報代售處：全國各大書局、報社、代售處均有代售

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LAWS REGULATING THE MINES OF MEXICO.—The mines in Spain were those which were established at Mexico; and the collection of all the documents bearing upon them had not been made, until their number, as well as their antiquity, rendering their interpretation embarrassing, M. Gamboa issued, in the year 1761, his *Discurso* which contains, besides numerous explanations of the laws relating to the working of the mines, numerous facts, some very curious, as to the former methods of mining in Mexico. In 1743, a miner, named Babo, thought of establishing a company, to furnish means to adventure mines on terms less onerous than those generally fixed upon by the exchequer of the capital, who, stipulating for no interest on their advance, had a great advantage, in insuring on being reimbursed in silver, at between six and seven piastres the marc (the price of the money, nine piastres), according to the duration of their outlay increased. A project was submitted to the King, and appears to have furnished a pretext to the idea of a special tribunal for mines—destined, at the same time to aid the miners with funds, arising from a tax of one real per marc on all the silver produced in Mexico, which was paid into this establishment. At the same period, it was thought necessary to revise all precedents, and, at the date of the 23d of May, 1783, the King decreed regulations for the government of the mines of New Spain, as it was called. In every mining district, a special tribunal was established for that purpose, similar to some of our minor courts, deciding, without appeal, in the extent of 400 piastres, and with appeal, beyond that sum, before a superior tribunal, established at Mexico and Guadalajara, the name of the Court of Alcaides. These local courts, the work which were committed by the inhabitants, were subordinated to the *Procurador General de Minería* at Mexico, and the members of which were the principal districts; the number of votes given to each shows the relative importance at this period. Gamboa had six, Zúñiga ten, San Luis three, Pacheco and Real del Monte two; every mining having the title of a city (*coahuila*) had three, and those of a town two only. This sort of jurisdiction had very extensive limits, not only the settlement of lawsuits, but also for the proper administration, in manner of exploring the mines; it also embraced the subject of the conservation of water, and the preservation of the forests, under the authority was also placed the Mining School (*Real Seminario de Minas*). After the independence, the commercial courts and the mining laws were suppressed, but the former are now being restored, and the latter are about to be re-constructed. These ordinances, or mining laws continued to be in operation, though limited to the province of Mexico only. They have been revised and corrected with great care, and seem now to be little needing modifications; however, we observe, that there is no allegation of that article which limits the action of the mines to natives—that is to say, which authorizes them to be not naturalized from having the action permission, who may, it being a partial interest in any of the mines. Every new mine belongs, who *Arrendatario* is, provided that, during the daily following has constructed a shaft to the vein of the mine at least of ten vara. The concessive extent of a square of 280 vara. The concession or three licks upon as such, by the works being suspended in the district of four consecutive months, can also be dismissed. The *concesiones* (*concesiones de trabajo*) may also be compared as to the and because the property of him who discovers it there, whenever are carried on, the buildings are taken in prime, and all the *concesiones*, but the proprietor has no right of four months to his property, if he prefers more time to carry operations. In the second dispatch, a great many very proper regulations are suggested which are to be observed, these affecting the cost of the the neighbouring mines, and for the sharing of the mineral estate common to a stranger, by means of concessionary works which then exist at such a depth by the works of the proprietor. The *concesiones* are also imposed as to the mode of engineering, and the the workmen, but it is to be required, that the generally the portion of the ordinance is not regarded, as respects the government, and the honor of labor, with all that multitude which is almost demanded, though the concession is attended with a permission. These same ordinances granted to the *concesiones* of rights, some of which, on that of stability, have considerable effect, relating to the rights of *concesiones*, will cause the same. A notice, or proprietor of a concessionary workman, must be given by his conditions, whose only cause is to mine on the works, or those in their own account, taking of the problem to the *concesiones* themselves, the same time, according to the *concesiones* of

PRICES OF MINING SHARES.

[illegible]

1,200 Cook's Kitchen	10	100	1,200 West Wing Jewell	10	100
1,200 East Wing	10	100			

[illegible]

1,000	Hanson	0	10	125	Wheel Trainers	4	10
1,000	Tail of Hair (Glossy)	10	10	200	Wheel Producers	5	10
100	Levend	100	100	250	Wheel Norris	10	10

1,000	Hansen	8	10	123	Wheat	Traskway	4	10
1,000	Oil and Salt (Monthly)	10	11	124	Wheat	Producers	5	10
100	Levant	—	100	125	Wheat	Noria	5	10
100	Lebanon & Puntland	—	100	126	Wheat	Trees	5	10
1,000	Levin	8	10	127	Wheat	Troville	5	10
1,000	Mining Co. of Ireland	7	10	128	Wheat	California	3	12
1,000	Ministry Mines	100	—	129	Wheat	Furrows	5	10
100	Mad. Valley	—	12					

74 North American.....	100	FOREIGN MINES.
75 North American.....	100	

7th North America		FOREIGN MINER	
200	North. Homebush	1,500	Allen Mining Company Ltd.
200	North. United	10,000	Anglo Mexicon Co.
204	North. Winal Hunt	3,574	D. Subscription
208	Newquay	12	Robson
210	Old. Fwy. Concess	12,000	Old. Fwy. Concess
210	Par. United	1,200	Bradford
212	Penabaz. Mont.	5	Robson
210,000	Rhinehart	10	Dillon Bros.

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Line.	Length Miles.	Present an- nual cost.	Pd. on share.	Val. of share.	Last year's income.	Last year's
Albion and Port Huron Railway	15	\$ 1,08,140	35	35	\$ 53 18 0	\$ 143
Birmingham and Derby Road	40 1/2	1,175,130	100	652	1,000 18 10	1,328
Chesham and London	63	1,469,360	100	854	815 15 0	1,172
Stratford Junction	6	41,5 7	30	45	45 12 11	78
Chertsey and Bournemouth	14 1/2	310,434	50	30	414 15 0	494
Stratford and Kingston	6	540,700	100	130	367 17 4	765
Stroud and Abingdon	10 1/2	184,000	25	25	238 0 0	108
Warham and Dissendene	11 1/2	367,780	50	50	308 0 7	390
Eastern Counties ?	34 1/2	3,777,394	25	12 1/2	442 4 3	1,094
Northsea and Southsea	5 1/2	1,008,434	40	57 1/2	500 15 10	1,014
Southsea and London	40	1,611,870	50	300	1,000 4 8	1,014
London and Aylesbury	33 1/2	1,265,000	50	250	1,000 4 8	1,014
London and Greenwich	12 1/2	796,387	25	12 1/2	796 38 7	1,014
Gr. Joint. and London & Croy-	11 1/2	5,322,130	100	35 1/2	7,000 10 7	947
London North or Brighton	40	1,007,467	140	97	1,220 0 11	1,475
Great Western	110 1/2	6,878,127	78 1/2	1,000	10 0 5	1,375
Leamington and Manchester	21	1,378,615	100	22 1/2	41 8 6	870

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Source: U.S. Bureau of Economic Analysis. *U.S. National Income and Product Accounts*. Washington, D.C.: U.S. Government Printing Office, 1992. *U.S. National Income and Product Accounts*. Washington, D.C.: U.S. Government Printing Office, 1992.

London: Printed and Published, by J. D. COOPER, Stationer, at the Office,
No. 21, Pall Mall East.
In the City of London, where all Communications and Contributions are re-
quested to be forwarded—published by "The Editor"—1885.
[April 27, 1885]